

at the end of each cell; an elbowed discal line across each wing: primaries with the external area broadly blackish, interrupted at apex and on the second median interspace by white quadrate spots; fringe white: secondaries with crenate white outer border, indicated by an internal blackish discal streak; black marginal dots less distinct than above: body below white. Expanse of wings 1 inch 8 lines.

A well-defined species.

#### BIBLIOGRAPHICAL NOTICE.

*Researches on the Fossil Remains of the Extinct Mammals of Australia; with a Notice of the Extinct Marsupials of England.* By RICHARD OWEN, C.B., F.R.S. Two vols. 4to. Exrleben: London, 1877.

THIS work may be regarded as a supplementary volume to the original edition of Cuvier's 'Recherches sur les Ossemens Fossiles' (4to, 1821). In that work but one extinct species had been referred to the marsupial order, viz. the famous *Didelphys gypsorum* (vol. iii. pl. lxxi.), and the osteology of the existing species is not described as in the case of the placental Mammalia of which the fossil evidences are there so richly illustrated. The author of the present work has accordingly added descriptions and figures of the osteology and dentition of the existing Marsupialia to those of the fossil remains of the extinct species; the characteristics of the bony structure and teeth of the wombats and kangaroos are shown in detail. As in the great work of Cuvier, the several memoirs by which the discoveries and determinations of the fossils were first made known are reproduced with additional matter and in systematic order. A chapter is premised on the fossil Marsupials of England, with figures illustrative of twenty-eight species, referable to fifteen genera. Of the extinct Marsupials which have left their remains in Rhætic, Oolitic, and Purbeck deposits in England, some exemplify or prefigure, in a singular and interesting manner, genera and species of Marsupials which have left their remains in the comparatively recent drift-deposits and in the caves of Australia.

The author, quoting the remark of Cuvier, "Quant aux genres propres à l'Australasie, on n'en avoit jamais découvert parmi les fossiles d'Europe" ('Recherches sur les Ossemens Fossiles,' 4to, 1821, vol. iii. p. 292), remarks "it needed to go far below the tertiary beds to find the mammalian fossils most allied to those of Australia" (Preface, p. vi). He then states, "The teeth representing the Rhætic *Microlestes* find their nearest resemblance in the disproportionately small hind molars of *Thylacoleo*. The *Plagiailax* of the Purbeck beds pushes the correspondence to the shape and disproportionately large size of the incisors and sectorials; and the foremost

large lanariform teeth are reduced to a pair in both the pleistocene paucidentate Carnivore of Australia and its smaller British predecessor from the Upper Oolite. The multidentate marsupial Ferines from near the Lower Oolite (*Amphitherium*, *Amphilestes*, e. g.) are represented by the rare and singular still existing Australian genus *Myrmecobius*. The mandible and mandibular dentition of the typodontate carnivore *Phascolotherium*, a British extinct genus of like antiquity, find their characters more nearly repeated in *Thylacinus* and *Sarcophilus* than in any ex-Australian genera." The author subsequently sums up the evidences of existing Australian forms of vegetable and animal life which recall or repeat characters of the extinct forms revealed by fossils from British Mesozoic strata.

The Australian fossils which form the main subject of the present work are of the marsupial order, and are referred to the two suborders *Polyprotodontia*, or those with lower incisors more than two in number, and *Diprotodontia*, or those in which the lower incisors are limited to two in number.

The first suborder is represented by species of *Sarcophilus* and *Thylacinus*, some larger than the existing species, others of the same size, but from Australian localities where they have ceased to exist, the genera being represented by living species now confined to Tasmania. An extinct bandicoot (*Perameles tenuirostris*) is also referred to the Polyprotodont group. The suborder *Diprotodontia* is divided into two sections, *Sarcophaga* and *Poëphaga*.

In the first section the remains of *Thylacoleo* are described and figured in detail, and the physiological deductions therefrom are fully discussed (pp. 107-184). The *Poëphaga* are distributed, according to the characters of the limbs, into the tribes *Gravigrada*, *Fossoria*, and *Saltigrada*. The first of these tribes is represented by the genera *Diprotodon* and *Nototherium* (pp. 189-287), the species of which, of the size of the rhinoceros and ox, are all extinct.

The tribe *Fossoria* is still represented by the wombat, but formerly included species of the size of a tapir (*Phascolonus gigas* &c.), with modifications generically distinguishing them from the existing *Phascolomys*.

To the tribe *Saltigrada* the author refers seven extinct genera, besides representatives of the existing *Macropus*, some of which exceeded the largest living kangaroos in size. Not fewer than eighteen extinct species are characterized, and in part restored, of the larger Saltigrades, besides species of the smaller existing genera *Hypsiprymnus* and *Bettongia*.

After a survey of the 522 pages and 132 plates recording these 'Researches on the Fossil Mammals of Australia,' to which the author has devoted part of his annual labours since 1836, he might well be pardoned in indulging "in the flattering thought that the chances were small of future discoveries of new species of large extinct marsupial quadrupeds in the Australian continent." But he checks himself by the following remark:—"Warned, however, by the rate of progress of the science of palæontology since the

demise of its Founder, in 1832, I deem it more probable that a like lapse of time after the issue of the present volumes will have been attended by such rich results to the young and ardent naturalists of Australia as to show that their predecessor at home had but 'skimmed the cream,' and given them the broad outlines of a picture of ancient animated nature which their labours will fill in and finish."

In the descriptions and plates of the present work, devoted not only to the characteristic fossils of the extinct families, genera, and species, but also to the dentition and osteology of the still existing types, the generations issuing from the colonial schools, colleges, and universities of Australia, of whom some may be irresistibly led, like those of the present generation of Anglo-Americans, to investigate and interpret the phenomena of an envioning nature, will find an instrument which will facilitate and accelerate their endeavours to reconstruct the strange forms of mammalian life which once traversed the Australian plains and scrubs and have long since passed away from that continent.

In Prof. Owen's aim to elucidate the palæontology of the colonies of Great Britain the present work maintains the character and claim on favourable reception of that on the Fossil Reptilia of South Africa, noticed in the 'Annals' for June 1876.

## PROCEEDINGS OF LEARNED SOCIETIES.

### ROYAL SOCIETY.

April 12, 1877.—Dr. J. Dalton Hooker, C.B., President, in the Chair.

"On the Rapidity of Growth and Variability of some Madreporaria on an Atlantic Cable, with remarks upon the rate of accumulation of Foraminiferal Deposits." By Prof. P. MARTIN DUNCAN, F.R.S., Pres. Geol. Soc.

A telegraph-cable was laid off the north-west of Spain in 1870, and a portion of it was recovered in 1876, in long.  $9^{\circ} 4'$  W. and lat.  $44^{\circ} 6'$  N. The depth from which the recovered portion came was from 522 to 550 fathoms; the ground was conglomeratic, and there was a deposit there of sticky foraminiferal mud. Much coral-growth had occurred on the cable, and when it was fished up some living and dead forms, together with *Echini*, *Pectens*, and mud, came up from off the surrounding sea-floor.

The growth on the cable consisted of numerous individuals of *Desmophyllum Crista-Galli* of different sizes, and of many bush-shaped coralla of *Lophohelia prolifera*, var. *gracilis*; there were also small masses of *Solenosmilia variabilis* (nobis), a new *Am-*